

CLAIMS

1. Apparatus for application to skin of a subject, comprising:
 - a board having a first surface and a second surface, the first surface comprising a plurality of ablation electrodes, which are adapted to be applied to the skin, and the
 - 5 second surface comprising one or more contact pads, each one of the contact pads electrically coupled to at least one of the ablation electrodes;
 - one or more driving electrodes;
 - an energy applicator, coupled to the driving electrodes, the energy applicator adapted to pass the driving electrodes over the contact pads;
 - 10 a power source, adapted to drive a current
 - from the driving electrodes,
 - to the contact pads,
 - to the ablation electrodes,
 - capable of ablating at least a portion of stratum corneum of the skin in a vicinity
 - 15 of the ablation electrodes, so as to facilitate transdermal transport of a substance.
2. Apparatus according to claim 1, wherein the energy applicator is adapted to pass the driving electrodes over the contact pads such that at any given time less than all of the driving electrodes are in electrical contact with one or more of the contact pads.
- 20 3. Apparatus according to claim 1, wherein the power source is adapted to selectively drive the current to a subset of the driving electrodes.
4. Apparatus according to claim 1, wherein the energy applicator comprises a motor.
5. Apparatus according to claim 1, wherein the energy applicator comprises a
- 25 manual crank.
6. Apparatus according to claim 1, wherein the power source is adapted to drive the current such that skin layers beneath the stratum corneum are substantially not ablated.
7. Apparatus according to claim 1, comprising a marking unit, adapted to apply a
- 30 marking substance to the skin so as to demarcate a region of the skin to which the current is applied.

8. Apparatus according to claim 1, comprising one or more protrusive elements, adapted to press the skin so as to demarcate a region of the skin to which the current is applied.
9. Apparatus according to claim 1, wherein at least one of the ablation electrodes
5 is adapted to be applied to the skin so as to create a contact area having a characteristic length of between about 30 and 150 microns.
10. Apparatus according to claim 1, wherein the ablation electrodes comprise a current-driving ablation electrode and two or more return electrodes, and wherein the power source is adapted to drive respective currents between the current-driving
10 ablation electrode and each of the return electrodes.
11. Apparatus according to claim 1, wherein the plurality of ablation electrodes comprises at least 100 ablation electrodes.
12. Apparatus according to claim 1, wherein the power source comprises a first terminal and a second terminal, the first terminal adapted to be electrically coupled in
15 sequence to at least a portion of the contact pads at least a portion of the time, and wherein the board comprises:
- a conductive element, adapted to be electrically coupled to the second terminal and substantially electrically isolated from the contact pads; and
 - a dielectric having first and second dielectric surfaces thereof, the first dielectric
20 surface adapted to be coupled to the conductive element and the second dielectric surface adapted to be coupled to the ablation electrodes, such that, during a given ablation application period, when the first terminal is in electrical contact with a first set comprising one or more of the contact pads, and the power source drives a current
25 into the first set, a second set comprising one or more of the ablation electrodes, which are electrically isolated during the given ablation application period from all of the contact pads in the first set, function as a capacitive electrical return path for the current via the dielectric to the second terminal.
13. Apparatus according to claim 1, wherein the board comprises a printed circuit board (PCB), and wherein at least one of the ablation electrodes is coupled to the first
30 surface at a point on the first surface that is at least 5 millimeters from at least one of the contact pads to which the at least one of the ablation electrodes is electrically coupled.

14. Apparatus according to claim 13, wherein at least 25% of the ablation electrodes are coupled to the first surface at respective points on the first surface that are at least 3 millimeters from respective contact pads to which the ablation electrodes are electrically coupled.
- 5 15. Apparatus according to claim 1, wherein the power source is adapted to drive the current so as to facilitate transport of the substance through the skin into a body of the subject.
16. Apparatus according to claim 1, wherein the power source is adapted to drive the current so as to facilitate transport of the substance through the skin from within a
10 body of the subject.
17. Apparatus according to any one of claims 1-16, wherein one or more of the contact pads are electrically coupled to respective pluralities of the ablation electrodes.
18. Apparatus according to claim 17, wherein one or more of the contact pads are electrically coupled to respective sets of at least four of the ablation electrodes.
- 15 19. Apparatus according to any one of claims 1-16, wherein the contact pads are arranged in concentric circles on the second surface.
20. Apparatus according to claim 19, wherein the energy applicator is adapted to rotate the driving electrodes over the contact pads.
21. Apparatus according to any one of claims 1-16, comprising a support element,
20 supporting the driving electrodes, wherein the energy applicator is adapted to move the supporting element so as to pass the driving electrodes over the contact pads.
22. Apparatus according to claim 21, comprising a position sensor, adapted to monitor a position of the support element, wherein the power source is adapted to regulate timing of the driving of the current responsive to the monitored position.
- 25 23. Apparatus according to claim 21, wherein the support element is adapted to be movably coupled to the board.
24. Apparatus according to claim 23, wherein the support element is adapted to be rotatably coupled to the board, and wherein the energy applicator is adapted to rotate the support element so as to pass the driving electrodes over the contact pads.
- 30 25. Apparatus according to claim 24, wherein the contact pads and the driving electrodes are adapted to be arranged such that each of the contact pads comes in

contact with at least one of the driving electrodes during a rotation of the support element.

26. Apparatus according to any one of claims 1-16, comprising:

a plurality of power tracks, wherein the power source is adapted to supply
5 power to the power tracks; and

one or more power transfer elements, each having a first end and a second end,
each of the power transfer elements comprising:

one of the driving electrodes, disposed at the first end of the power transfer
element; and

10 a track contact, disposed at the second end of the power transfer element,
adapted to be in electrical contact with the one of the driving electrodes and to be
brought into contact with at least one of the power tracks.

27. Apparatus according to claim 26, each track contact is adapted to be brought
into contact in sequence with at least two of the power tracks.

15 28. Apparatus according to claim 26, wherein the power source is adapted to supply
power, for ablating stratum corneum, to less than all of the power tracks at any given
time.

29. Apparatus according to claim 26, wherein the power tracks are on the second
surface of the board.

20 30. Apparatus according to claim 26, wherein the power tracks are disposed in
concentric circles.

31. Apparatus according to claim 26, wherein each power track has a shape of a
partial arc.

32. Apparatus according to claim 26, wherein the power tracks are configured such
25 that at any given time, each of the power tracks is in electrical contact with only one of
the driving electrodes.

33. Apparatus according to claim 26, wherein the driving electrodes are configured
such that at any given position of the driving electrodes, less than all of the driving
electrodes are in electrical contact with a same one of the power tracks.

30 34. Apparatus according to claim 33, wherein the driving electrodes are configured
such that at a point in time during operation of the apparatus, a plurality of the driving

electrodes are in electrical contact with different respective power tracks, and wherein the power source is adapted to drive the current into less than all of the plurality of the driving electrodes at the point in time.

35. Apparatus for application to skin of a subject, comprising:

- 5 a contact board having a first contact board surface and a second contact board surface, the first contact board surface comprising one or more contact board contacts, and the second contact board surface comprising one or more contact pads, each contact pad electrically coupled to at least one of the contact board contacts;
- 10 an electrode cartridge removably coupled to the contact board, the electrode cartridge having a first cartridge surface and a second cartridge surface, the first cartridge surface comprising a plurality of ablation electrodes, which are adapted to be applied to the skin, and the second cartridge surface comprising one or more cartridge contacts, each cartridge contact electrically coupled to at least one of the ablation electrodes, such that when the electrode cartridge is coupled to the contact board, at
- 15 least a portion of the contact board contacts come into electrical contact with at least a portion of the cartridge contacts;
- one or more driving electrodes;
- an energy applicator, coupled to the driving electrodes, the energy applicator adapted to pass the driving electrodes over the contact pads; and
- 20 a power source, adapted to drive a current
- from the driving electrodes,
- to the contact pads,
- to the contact board contacts,
- to the cartridge contacts,
- 25 to the ablation electrodes,
- capable of ablating at least a portion of stratum corneum of the skin in a vicinity of the ablation electrodes, so as to facilitate transdermal transport of a substance.

36. Apparatus according to claim 35, wherein the energy applicator is adapted to pass the driving electrodes over the contact pads such that at any given time less than

30 all of the driving electrodes are in electrical contact with one or more of the contact pads.

37. Apparatus according to claim 35, wherein the power source is adapted to selectively drive the current to a subset of the driving electrodes.

38. Apparatus according to claim 35, wherein the power source is adapted to drive the current such that skin layers beneath the stratum corneum are substantially not ablated.

39. Apparatus according to claim 35, wherein at least one of the ablation electrodes
5 is adapted to be applied to the skin so as to create a contact area having a characteristic length of between about 10 and 100 microns.

40. Apparatus according to claim 35, wherein the plurality of ablation electrodes comprises at least 100 ablation electrodes.

41. Apparatus according to claim 35, wherein the power source comprises a first
10 terminal and a second terminal, the first terminal adapted to be electrically coupled in sequence to at least a portion of the contact pads at least a portion of the time, and wherein the contact board comprises:

a conductive element, adapted to be electrically coupled to the second terminal and substantially electrically isolated from the contact pads; and

15 a dielectric having first and second dielectric surfaces thereof, the first dielectric surface adapted to be coupled to the conductive element and the second dielectric surface adapted to be coupled to the contact board contacts, such that, during a given ablation application period, when the first terminal is in electrical contact with a first set comprising one or more of the contact pads, and the power source drives a current
20 into the first set, a second set comprising one or more of the contact board contacts, which are electrically isolated during the given ablation application period from all of the contact pads in the first set, function as a capacitive electrical return path for the current via the dielectric to the second terminal.

42. Apparatus according to claim 35, wherein the contact board comprises a printed
25 circuit board (PCB), and wherein at least one of the contact board contacts is coupled to the first contact board surface at a point on the first contact board surface that is at least 5 millimeters from at least one of the contact pads to which the at least one of the contact board contacts is electrically coupled.

43. Apparatus according to claim 42, wherein at least 25% of the contact board
30 contacts are coupled to the first contact board surface at respective points on the first contact board surface that are at least 3 millimeters from respective contact pads to which the contact board contacts are electrically coupled.

44. Apparatus according to claim 35, wherein the power source is adapted to drive the current so as to facilitate transport of the substance through the skin into a body of the subject.
45. Apparatus according to claim 35, wherein the power source is adapted to drive the current so as to facilitate transport of the substance through the skin from within a body of the subject.
46. Apparatus according to any one of claims 35-45, wherein one or more of the contact pads are electrically coupled to respective pluralities of the contact board contacts.
47. Apparatus according to claim 46, wherein one or more of the contact pads are electrically coupled to respective sets of at least four of the contact board contacts.
48. Apparatus according to any one of claims 35-45, wherein the contact pads are arranged in concentric circles on the second contact board surface.
49. Apparatus according to claim 48, wherein the energy applicator is adapted to rotate the driving electrodes over the contact pads.
50. Apparatus according to any one of claims 35-45, comprising a support element, supporting the driving electrodes, wherein the energy applicator is adapted to move the supporting element so as to pass the driving electrodes over the contact pads.
51. Apparatus according to claim 50, comprising a position sensor, adapted to monitor a position of the support element, wherein the power source is adapted to regulate timing of the driving of the current responsive to the monitored position.
52. Apparatus according to claim 50, wherein the support element is adapted to be movably coupled to the contact board.
53. Apparatus according to claim 52, wherein the support element is adapted to be rotatably coupled to the contact board, and wherein the energy applicator is adapted to rotate the support element so as to pass the driving electrodes over the contact pads.
54. Apparatus according to claim 53, wherein the contact pads and the driving electrodes are arranged such that each of the contact pads comes in contact with at least one of the driving electrodes during a rotation of the support element.
55. Apparatus according to any one of claims 35-45, wherein the electrode cartridge comprises at least one housing and at least one set of two or more wires coupled to the

housing, each wire having two ends and an intermediate portion, the wires supported by the housing, bent and crossed with one another at the intermediate portion of each wire, so that the intermediate portions of the wires touch each other and so that all of the ends of the wires substantially form a plane, the ends configured to function as at least four
5 of the ablation electrodes.

56. Apparatus according to claim 55, wherein the intermediate portion of one of the wires is configured to function as one of the cartridge contacts and to be electrically coupled to one of the contact board contacts.

57. Apparatus according to claim 55, comprising a coupling member, adapted to
10 electrically couple the intermediate portion of one of the wires to one of the contact board contacts.

58. Apparatus according to claim 55, wherein the set comprises exactly two wires.

59. Apparatus according to claim 55, wherein each wire has a shape generally like a staple.

15 60. Apparatus according to claim 55, wherein each wire is adapted to be supported by the housing by passing through the housing, and wherein a portion of each wire that passes through the housing is shaped so as to define an angular bend within the housing.

61. Apparatus according to any one of claims 35-45, wherein the electrode cartridge
20 comprises:

at least one housing;

at least one set of two or more wires coupled to the housing, each wire having two ends and an intermediate portion, the wires supported by the housing so as not to touch each other; and

25 a coupling element, coupled to the intermediate portion of each of the wires, so that all of the ends of the wires substantially form a plane, the ends configured to function as at least four of the ablation electrodes.

62. Apparatus according to claim 61, wherein the coupling element is configured to function as one of the cartridge contacts and to be electrically coupled to one of the
30 contact board contacts.

63. Apparatus according to claim 61, wherein each wire has a shape generally like a staple.

64. Apparatus according to claim 61, wherein each wire is adapted to be supported by the housing by passing through the housing, and wherein a portion of each wire that
5 passes through the housing is shaped so as to define an angular bend within the housing.

65. Apparatus according to any one of claims 35-45, comprising:

a plurality of power tracks, wherein the power source is adapted to supply power to the power tracks; and

10 one or more power transfer elements, each having a first end and a second end, each of the power transfer elements comprising:

one of the driving electrodes, disposed at the first end of the power transfer element; and

a track contact, disposed at the second end of the power transfer element,
15 adapted to be in electrical contact with the one of the driving electrodes and to be brought into contact with at least one of the power tracks.

66. Apparatus according to claim 65, wherein the power source is adapted to supply power, for ablating stratum corneum, to less than all of the power tracks at any given time.

20 67. Apparatus according to claim 65, wherein the power tracks are on the contact board.

68. Apparatus according to claim 65, wherein each power track has a shape of a partial arc.

69. Apparatus according to claim 65, wherein the power tracks are configured such
25 that at any given time, each of the power tracks is in electrical contact with only one of the driving electrodes.

70. Apparatus according to claim 65, wherein the driving electrodes are configured such that at any given position of the driving electrodes, less than all of the driving electrodes are in electrical contact with a same one of the power tracks.

30 71. Apparatus according to claim 70, wherein the driving electrodes are configured such that at a point in time during operation of the apparatus, a plurality of the driving

electrodes are in electrical contact with different respective power tracks, and wherein the power source is adapted to drive the current into less than all of the plurality of the driving electrodes at the point in time.

72. Apparatus for application to skin of a subject, comprising:

5 a board, having a first surface and a second surface, the first surface comprising a plurality of conductors, adapted to be brought in contact with the skin, and the second surface comprising a plurality of contact pads, each of the contact pads electrically coupled to at least one of the conductors;

10 a power unit, having a first terminal and a second terminal, the first terminal adapted to be electrically coupled in sequence to at least a portion of the contact pads at least a portion of the time, the power unit adapted to drive a current from the contact pads to the conductors, capable of ablating stratum corneum of the skin in a vicinity of the conductors, so as to facilitate transdermal transport of a substance;

15 a conductive element, adapted to be electrically coupled to the second terminal and substantially electrically isolated from the contact pads; and

20 a dielectric having first and second dielectric surfaces thereof, the first dielectric surface adapted to be coupled to the conductive element and the second dielectric surface adapted to be coupled to the conductors, such that, during a given ablation application period, when the first terminal is in electrical contact with a first set comprising one or more of the contact pads, and the power unit drives a current into the first set, a second set comprising one or more of the conductors, which are electrically isolated during the given ablation application period from all of the contact pads in the first set, function as a capacitive electrical return path for the current via the dielectric to the second terminal.

25 73. Apparatus according to claim 72, wherein the apparatus is arranged to produce an impedance of the capacitive return path that is less than 5 kilo-ohms.

74. Apparatus according to claim 72, wherein during any given ablation application period the first set comprises exactly one contact pad.

30 75. Apparatus according to any one of claims 72-74, wherein during any given ablation application period, a ratio of a number of contact pads in the first set to a number of conductors in the second set is less than 1:1.

76. Apparatus according to claim 75, wherein the ratio is less than 1:20.

77. Apparatus according to claim 76, wherein the ratio is less than 1:100.
78. Apparatus comprising a housing and a set of two or more wires coupled to the housing, each wire having two ends and an intermediate portion, the wires supported by the housing, bent and crossed with one another at the intermediate portion of each wire,
5 so that the intermediate portions of the wires touch each other and so that all of the ends of the wires substantially form a plane, the ends configured to function as electrodes for ablating stratum corneum of skin of a subject when applied to the skin.
79. Apparatus according to claim 78, wherein the set comprises exactly two wires.
80. Apparatus according to claim 78, wherein each wire has a shape generally like a
10 staple.
81. Apparatus according to any one of claims 78-80, wherein each wire is adapted to be supported by the housing by passing through the housing, and wherein a portion of each wire that passes through the housing is shaped so as to define an angular bend within the housing.
- 15 82. Apparatus for ablating stratum corneum, comprising:
a housing;
a set of two or more wires coupled to the housing, each wire having two ends and an intermediate portion, the wires supported by the housing so as not to touch each other; and
20 a coupling element, electrically coupled to the intermediate portion of each of the wires, so that all of the ends of the wires substantially form a plane, the ends configured to function as electrodes for ablating stratum corneum of skin of a subject when applied to the skin.
83. Apparatus according to claim 82, wherein each wire has a shape generally like a
25 staple.
84. Apparatus according to claim 82 or claim 83, wherein each wire is adapted to be supported by the housing by passing through the housing, and wherein a portion of each wire that passes through the housing is shaped so as to define an angular bend within the housing.
- 30 85. A method for facilitating transport of a substance through an area of skin of a subject, the area defining a set of ablation sites, the method comprising driving current

in a sequence into more than one of the ablation sites, the current being capable of ablating stratum corneum of the skin in the ablation sites, so as to facilitate transdermal transport of the substance, the sequence being configured such that, during successive first, second, and third time periods the current is driven into respective first, second, and third ones of the ablation sites, the first ablation site being non-adjacent to the second ablation site, and the second ablation site being non-adjacent to the third ablation site.

86. A method according to claim 85, wherein driving the current in the sequence comprises configuring the sequence to generally maximize a minimum distance between ablation sites into which current is driven during successive time periods.

87. A method according to claim 85, wherein a sum of distances between temporally adjacent ones of the ablation sites into which current is driven is typically greater than such sum would be if the sequence is generated randomly.

88. A method according to any one of claims 85-87, wherein driving the current comprises driving the current during 10 successive time periods, the sequence being configured such that a distance between successive sites of application of the current during each of the periods is greater than 1 mm.

89. A method according to claim 88, wherein driving the current during the 10 successive time periods, comprises configuring the sequence such that a distance between successive sites of application of the current during each of the periods is greater than 3 mm.

90. A method according to any one of claims 85-87, wherein driving the current comprises driving the current during at least 10 successive time periods into respective ones of the ablation sites, the sequence being configured such that, for each of the periods, during temporally adjacent ones of the time periods, the current is driven into non-adjacent ablation sites.

91. A method according to claim 90, wherein driving the current comprises configuring the current such that during the at least 10 successive time periods, none of the ablation sites into which current is driven is adjacent to another one of the ablation sites into which current is driven.

92. Apparatus for facilitating transport of a substance through an area of skin of a subject, the area defining a set of ablation sites, the apparatus comprising:

a plurality of electrodes, which are adapted to be placed in contact with the area of the skin at the ablation sites; and

5 a control unit, adapted to drive, during successive first, second, and third time periods, a current capable of ablating stratum corneum of the skin to a first one, a second one, and a third one of the electrodes, the first one of the electrodes being non-adjacent to the second one of the electrodes, and the second one of the electrodes being non-adjacent to the third one of the electrodes, so as to facilitate transdermal transport
10 of the substance.

93. Apparatus according to claim 92, wherein the control unit is adapted to typically maximize a minimum distance between electrodes into which current is driven during successive time periods.

94. Apparatus according to claim 92, wherein the control is adapted to drive the
15 current such that a sum of distances between temporally adjacent ones of the electrodes into which current is driven is typically greater than such sum would be if a sequence of electrodes is generated randomly.

95. Apparatus according to any one of claims 92-94, wherein the control unit is adapted to drive the current during 10 successive time periods, such that a distance
20 between successive sites of application of the current during each of the periods is greater than 1 mm.

96. Apparatus according to claim 95, wherein the control unit is adapted to drive the current during 10 successive time periods, such that a distance between successive sites of application of the current during each of the periods is greater than 3 mm.

25 97. Apparatus according to any one of claims 92-94, wherein the control unit is adapted to drive the current during at least 10 successive time periods into respective ones of the electrodes, such that, for each of the periods, during temporally adjacent ones of the time periods, the current is driven into non-adjacent electrodes.

98. Apparatus according to claim 97, wherein the control unit is adapted to drive
30 the current during the at least 10 successive time periods, such that during none of the time periods is the current driven into adjacent electrodes.

99. A method for facilitating transport of a substance through skin of a subject, comprising:

applying calibration electrical energy between a first and a second site on the skin, the calibration electrical energy configured such that stratum corneum of the skin is substantially not ablated;

measuring a parameter of the calibration electrical energy;

determining, responsive to the measured parameter, a level of ablating electrical energy capable of ablating stratum corneum of the skin; and

applying the ablating electrical energy at the determined level to at least a portion of the skin, so as to facilitate transdermal transport of the substance.

100. A method according to claim 99,

wherein applying the calibration electrical energy comprises applying the calibration electrical energy between a plurality of first sites and a plurality of respective second sites,

wherein measuring the parameter comprises measuring the parameter with respect to each of the first sites and the respective second sites,

wherein determining the level of ablating electrical energy comprises determining the level with respect to each of the first sites and the respective second sites, and

wherein applying the ablating electrical energy comprises applying the ablating electrical energy at the respective determined levels at each of the respective first and second sites.

101. A method according to claim 99, wherein applying the calibration electrical energy comprises applying the energy for less than 200 microseconds.

102. A method according to any one of claims 99-101, wherein applying the calibration electrical energy comprises applying a voltage drop between the first and the second sites.

103. A method according to claim 102, wherein applying the voltage drop comprises setting the voltage drop to be between about 50 and 100 volts.

104. A method according to claim 102, wherein measuring the parameter comprises measuring a level of a current flowing responsive to the voltage drop.

105. Apparatus for facilitating transport of a substance through skin of a subject, comprising:

a plurality of electrodes, which are adapted to be placed in contact with the skin;

and

5 a control unit, adapted to:

apply calibration electrical energy between a first one and a second one of the electrodes, the calibration electrical energy configured such that stratum corneum of the skin is substantially not ablated,

measure a parameter of the calibration electrical energy,

10 determine, responsive to the measured parameter, a level of ablating electrical energy capable of ablating stratum corneum of the skin, and

apply the ablating electrical energy at the determined level to at least a portion of the skin, using at least a portion of the electrodes, so as to facilitate transdermal transport of the substance.

15 106. Apparatus according to claim 105, wherein the plurality of electrodes comprises a plurality of first electrodes and a plurality of respective second electrodes, and wherein the control unit is adapted to:

apply the calibration electrical energy between the plurality of first electrodes and the plurality of respective second electrodes,

20 measure the parameter with respect to each of the first electrodes and the respective second electrodes,

determine the level with respect to each of the first electrodes and the respective second electrodes, and

25 apply the ablating electrical energy at the respective determined levels at each of the respective first and second electrodes.

107. Apparatus according to claim 105, wherein the control unit is adapted to apply the calibration electrical energy between the first and the second electrodes for less than 200 microseconds.

30 108. Apparatus according to any one of claims 105-107, wherein the control unit is adapted to apply the calibration electrical energy by applying a voltage drop between the first and the second electrodes.

109. Apparatus according to claim 108, wherein the control unit is adapted to set the voltage drop to be between about 50 and 100 volts.

110. Apparatus according to claim 108, wherein the control unit is adapted to measure the parameter by measuring a level of a current flowing responsive to the voltage drop.
111. Apparatus for application to skin of a subject, comprising:
- 5 a handle;
- an electrode cartridge comprising electrodes which are adapted to be brought in contact with the skin;
- a pivot joint coupled to the handle;
- a floating element coupled to the handle by the pivot joint and coupled to the
- 10 electrode cartridge; and
- a control unit, adapted to detect a displacement of the floating element when force is applied to the electrode cartridge by the skin, and, responsive thereto, to drive through the electrodes current capable of ablating stratum corneum of the skin, so as to facilitate transdermal transport of a substance.
- 15 112. Apparatus according to claim 111, comprising a switch, wherein the control unit is adapted to detect the displacement of the floating element responsive to a change in state of the switch.
113. Apparatus according to claim 111 or claim 112, wherein the handle comprises two or more snaps, and wherein the floating element is adapted to be removably
- 20 coupled to the electrode cartridge by the snaps.
114. Apparatus according to claim 113, wherein the snaps are arranged to: (a) prevent the electrode cartridge from separating from the floating element, and (b) avoid causing a displacement of the floating element sufficient to cause the control unit to drive current through the electrodes.
- 25 115. Packaging for storing an electrode-containing element having a plurality of skin-contact electrodes disposed on a skin-contact surface of the element so as to substantially define a skin-contact plane, the packaging comprising:
- a removable cover, disposed so as to substantially define a cover plane; and
- a container, shaped so as to define an element indentation therein, the element
- 30 indentation having a bottom surface and shaped to hold the electrode-containing element in a position such that the cover plane and the skin-contact plane of the

electrode-containing element form an angle of greater than 5 degrees and less than 90 degrees when the electrode-containing element is stored in the packaging.

116. Packaging according to claim 115, wherein the angle is between about 10 and 35 degrees.

5 117. Packaging according to claim 115, wherein the container comprises blister packaging.

118. Packaging according to any one of claims 115-117, wherein the container is shaped so as to define a handle indentation therein, shaped so as to accept a handle, and so as to guide the handle to accurately couple with the electrode-containing element
10 while the electrode-containing element is in the element indentation.

119. Apparatus for application to skin of a subject, comprising:

a plurality of ablation electrodes, which are adapted to be placed in contact with the skin so as to provide electrical contact with the skin;

- at least two driving electrodes, adapted to be passed across the ablation
15 electrodes, so as to create electrical contact between respective ones of the driving electrodes and the ablation electrodes; and

a power source, adapted to drive a first one of the driving electrodes to apply current capable of ablating stratum corneum of the skin to a first set of at least one of the ablation electrodes, and to drive a second one of the driving electrodes to apply
20 current capable of ablating stratum corneum of the skin to a second set of at least one of the ablation electrodes, so as to facilitate transdermal transport of a substance.

120. Apparatus according to claim 119, wherein the power source is adapted to:

drive the first one of the driving electrodes to apply the current capable of ablating stratum corneum to the first set of ablation electrodes during a first pass of the
25 driving electrodes across the ablation electrodes, and

drive the second one of the driving electrodes to apply the current capable of ablating stratum corneum to the second set of ablation electrodes during a second pass of the driving electrodes across the ablation electrodes.

121. Apparatus according to claim 119, wherein the driving electrodes are adapted to
30 be passed across the ablation electrodes so as to create electrical contact with a first one of the ablation electrodes prior to creating electrical contact with a second one of the ablation electrodes.

122. Apparatus according to claim 119, wherein the power source is adapted to drive the current such that skin layers beneath the stratum corneum are substantially not ablated.
123. Apparatus according to any one of claims 119-122, comprising a driving
5 mechanism, adapted to pass the driving electrodes across the ablation electrodes.
124. Apparatus according to claim 123, comprising a belt, adapted to be coupled to the driving mechanism, the belt comprising the driving electrodes.